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PUBLIC UTILITIES
COMMISSION

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF HAWAII

In the Matter of)
)
PUBLIC UTILITIES COMMISSION)
) DOCKET NO. 03-0371
Instituting a Proceeding to)
Investigate Distributed)
Generation in Hawaii.)
_____)

COUNTY OF MAUI'S RESPONSES TO SUPPLEMENTAL INFORMATION
REQUESTS FROM HAWAIIAN ELECTRIC COMPANY, INC.,
HAWAII ELECTRIC LIGHT COMPANY, INC., AND
MAUI ELECTRIC COMPANY, LIMITED

CERTIFICATE OF SERVICE

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HECO/Maui-DT-SIR-1 Ref: Maui response to HECO/Maui-DT-IR-1

- a. What is the date of the case study provided?
- b. Who was the case study prepared for?
- c. Please provide background information on ENCORP, Inc., including an internet address, if available.
- d. It is not clear from the case study that a virtual power plant concept has actually been implemented and is still functioning. What is the current status of the program at Public Service of New Mexico?
- e. Please provide a copy of Public Service of New Mexico's tariff outlining the terms and conditions, and rates associated with the operation of their "virtual power plant".
- f. Are there any other electric utilities that "aggregate networks of customer-sited generators together into "virtual power plants" to provide grid reliability services"?
- g. For the utilities identified in subpart f. above, please provide a copy of the tariff outlining the terms and conditions and rates associated with the operation of their "virtual power plant".
- h. What is your understanding of the current availability and use of interruptible rates in Hawaii?

Responses

- a. The date of the case study is unknown. Mr. Kobayashi printed the case study off of the Internet, but did not record the date.
- b. The case study appears to be prepared for the general public.

- c. For background information on Encorp, Inc., see www.encorp.com.
- d. The current status is unknown.
- e. We do not have a copy of the tariff.
- f. Mr. Kobayashi was informed by Encorp in the late 1990's that Carolina Power and Light instituted a virtual power plant program, but CP&L has since been taken over by another company and we are not aware of the status of the virtual power plant program.
- g. We do not have a copy of the tariff.
- h. MECO has an interruptible rider service, Rider "I", and an off-peak and curtailable service, Rider "M".

HECO/Maui-DT-SIR-2 Ref: Maui response to HECO/Maui-DT-IR-4

Is it the County of Maui's position that the only land requirements for wind systems are relative to the "footprint" area of the turbines? Please fully explain your response.

Response:

No, however, agricultural activities can be conducted in the non-footprint areas of a wind farm.

HECO/Maui-DT-SIR-3 Ref: Maui response to HECO/Maui-DT-IR-5

Why are there no geothermal heat pump systems currently being used in Hawaii? Please fully explain your response.

Response:

According to the US Energy Information Administration, 3,323 geothermal heat pumps were shipped to western region states during 2002; Hawaii is a part of this region.
http://www.eia.doe.gov/cneaf/solar.renewables/page/rea_data/table39.html

We do not know that there are not any geothermal heat pumps currently being used in Hawaii. We assume there are some. Due to low heating and cooling degree days, the economics of residential scale geothermal heat pumps would be poor. In hard lava soils, the cost of installation would be high. These factors may contribute to low saturation rates.

HECO/Maui-DT-SIR-4 Ref: Maui response to HECO/Maui-DT-IR-9 subpart c.

Does the County of Maui consider the Puunene and H-Power facilities as DG? What are the smallest sizes of such facilities that are practical, feasible, and viable, such that they might be deployed as DG?

Response:

The witness believes that the cited facilities qualify as "DG" in the context of the grids in which they are installed. The term "such facilities" is assumed to include photovoltaic solar, and the smallest size that is practical, feasible, and viable are less than one kilowatt in capacity.

HECO/Maui-DT-SIR-5 Ref: Maui response to HECO/Maui-DT-IR-9 subpart d.

For each of the on-site renewable systems discussed in this IR, please provide a cost breakdown for an actual installation, preferably in Hawaii. The cost breakdown should include costs for equipment, land, permitting, line extensions, and operations and maintenance.

Response:

The witness does not have the requested data.

HECO/Maui-DT-SIR-6 Ref: Maui response to HECO/Maui-DT-IR-21

Please provide a cost estimate for the required equipment, along with the workpapers supporting the estimate.

Response:

The witness does not have the requested data.

HECO/Maui-DT-SIR-7 Ref: Maui response to HECO/Maui-DT-IR-25

Please confirm that the witness is unaware of any electric utilities that have implemented "full cost" generation impact fees.

Response:

The witness is unaware of any electric utilities that have implemented full cost generation impact fees for small customers. The witness is aware of special contract requirements with termination charges for large customers that have many of the same economic effects as full-generation impact fees.

HECO/Maui-DT-SIR-8 Ref: Maui response to HECO/Maui-DT-IR-30

Are there any other alternatives besides inverting rates to make solar photovoltaic and solar water heat resources cost effective? If yes, please identify the other alternatives and fully explain your response.

Response:

Yes. A direct subsidy from the utility or from state or federal taxing authorities can change the consumer economics of solar photovoltaic and solar water heat. A capacity buy-back program for existing customers, and new customer impact fees for new customers can change the consumer economics of solar photovoltaic and solar water heat. Utility ownership of the solar resources, with unit pricing to consumers at competitive rates (as Idaho Power has done) can change the consumer economics of solar photovoltaic and solar water heat. The precise impact on cost-effectiveness will be situation-specific.

HECO/Maui-DT-SIR-9 Ref: Maui response to HECO/Maui-DT-IR-32, subpart a.

Is the County aware of any electric utilities that provide preferential treatment to the County or municipal agencies as to provide wheeling service only to these customers? If the answer is yes, please identify the utilities and the County or municipal agencies that they provide wheeling services to.

Response:

The Bonneville Power Administration provides wheeling service to municipal and governmental agencies, not all of which are electric utilities, including the Washington Public Power Supply System (a generator), the East Columbia Basin Irrigation District, the Colville Indian Nation, the Bureau of Reclamation and Army Corps of Engineers.

The Western Area Power Administration provides wheeling service to numerous municipalities under its open access transmission tariff. The terms and conditions needed to qualify for this service are discussed at <http://www.wapa.gov/interconn/intsteps.htm>.

HECO/Maui-DT-SIR-10 Ref: Maui response to HECO/Maui-DT-IR-33

The response is based on the assumption that the utility is not allowed to invest directly in DG. If utility support of DG is encouraged by allowing the utility to invest in and offer DG services to customers, to what extent would an alternative form of regulation be required? Please fully explain your response.

Response:

An alternative form of regulation would be required to ensure that DG service is priced according to non-discriminatory cost-based principles, with appropriate charges for ancillary services required to make the service reliable. The CA witness discusses this in great detail.

HECO/Maui-DT-SIR-11 Ref: Maui response to HECO/Maui-DT-IR-34

Please confirm whether or not the County of Maui has had any discussions with owners of emergency generators to determine the level of their interest in allowing the utility to control the operation of their generators as a utility resource serving all customers. If any discussions have been had, please identify the customer (and the name and title of the customer's representative spoken to), the dates of the discussions, the substance of the discussion, the customer's response, and copies of all related correspondence.

Response:

We confirm that we do not recall any discussions of this manner.

HECO/Maui-DT-SIR-12 Ref: Maui response to HECO/Maui-DT-IR-36,
subpart a.

- a. Does the County agree that the installation of DG is more complex in terms of technical design, permitting, economics, and operations and maintenance than installing efficient household appliances? Please fully explain your response.
- b. What would be the basis for the utility to provide quality information concerning the complex, site-specific technical and economic issues of a DG installation at a customer's site, if the DG is being developed by a third party? Please fully explain your response.

Response:

- a. Yes. Key differences include interconnection and safety issues for other users of the electric grid, and emissions such as air and water.
- b. The role of the utility should be to help customers minimize the total cost of energy service, including both economic and external costs. The type of information suggested is necessary for customers to be able to make this judgment, just as information on lighting quality issues is necessary for customers to be able to make a judgment about a lighting efficiency retrofit project.

HECO/Maui-DT-SIR-13 Ref: Maui response to HECO/Maui-DT-IR-37,
subpart b.

- a. How does the County define "ancillary"?
- b. Would a dedicated substation also be considered "ancillary"?

Response:

We have not given consideration to ancillary services other than the six regulated ancillary services specified by FERC. This does not mean that other items should not be considered as ancillary.

HECO/Maui-DT-SIR-14 Ref: Maui response to HECO/Maui-DT-IR-12,
subpart b.

- a. Under the County of Maui's envisioned "virtual power plant program" concept, is the owner of an on-site emergency generator permitted to preempt dispatch of the generator by the utility in order to use the generator for its intended on-site emergency back-up source of electricity for the customer's facility?
- b. If the answer to subpart a. above is yes, then how does the "virtual power plant program" concept provide the utility with

a firm capacity resource that it can utilize in its integrated resource planning process to provide electricity for all customers on the utility system?

Responses:

- a. Yes
- b. If the customer has been curtailed by the utility due to a system failure, then the customer's load is not on the utility and the utility cannot serve the customer's load. Use of the generator under these circumstances serves a load that the utility would be obligated to serve if the utility could do so. During times when the utility's distribution service is able to serve the customer, the generator is available to offset firm loads of the utility, including those of the customer.

HECO/Maui-DT-SIR-15 Ref: Maui Response to HECO/Maui-DT-IR-19, subpart a.

- a. Please provide a list of all U.S. utilities that have "distribution connection charges measured on an amp, panel size, or transformer kW basis".
- b. Please provide a copy of the "distribution connection charge" tariff of each utility listed in subpart a. above.

Response:

The witness does not have such a list.

HECO/Maui-DT-SIR-16 Ref: Maui Response to HECO/Maui-DT-IR-23, subpart b.

Please explain the differences between the impact of a "new customer's load" and the impact of an existing customer's load growth on "local distribution issues".

Response:

A new customer's growth normally requires new facilities. An existing customer's growth requires new facilities if and only if the existing facilities are not of adequate size to serve growth, taking into account load reductions that may have occurred at other customers on the relevant segment of distribution. Under ideal load/resource balance, there is no difference, but such perfect matching of transmission and distribution facilities to load is uncertain. Where loads are resources are closely matched, a conservation incentive and/or capacity buy-back program for

existing customers should be available to compensate them for the value of transmission and distribution capacity freed up by load reductions.

HECO/Maui-DT-SIR-17 Ref: Maui Response to HECO/Maui-DT-IR-23, subpart e.

Please explain how and what the impact of the County of Maui's proposed generation impact fee will be on "customers with expanding load" and on "new customers"?

Response:

The impact would be similar. Customers would face a per-kw charge for new and/or expanded loads, and this fee would provide an incentive for them to invest in alternatives that would mitigate their load growth.

HECO/Maui-DT-SIR-18 Ref: Maui Response to HECO/Maui-DT-IR-25 and HECO/Maui-DT-IR-3

- a. Does the County of Maui plan to survey utilities on their generation impact fees?
- b. If the response to subpart a. above is yes, when would the results of such survey be available.

Response:

No.

HECO/Maui-DT-SIR-19 Ref: Maui Response to HECO/Maui-DT-IR-4

Information on land requirements (in acres per megawatt) for various renewable DG systems were not provided. In addition, the website link provided did not yield the desired information. Please provide estimates of the land requirements for renewable DG systems (e.g., wind, solar, and biomass) in units of acres per megawatt.

Response:

All information relied upon in the preparation of the testimony has been provided.

HECO/Maui-DT-SIR-20 Ref: Maui Response to HECO/Maui-DT-IR-8, subpart b.

The County of Maui indicated that capacity credit for wind energy systems can be based on findings of loss of load probability (LOLP) studies. In addition, the County of Maui stated that "... even a system that provides zero benefit during the "peak period" may deserve a capacity credit".

- a. How does the LOLP-based capacity credit described in HECO/Maui-DT-IR-8 equate to a firm capacity amount that the electric utility could rely upon to fulfill its long-term obligations to provide firm power to its customers?
- b. Does the County of Maui believe that a Hawaii electric utility should rely on a firm capacity amount for intermittent as-available energy generators based on the LOLP capacity credit methodology to defer the construction of new capacity?
- c. Please elaborate on the County of Maui's rationale that a wind energy generator, whose output depends on the strength and availability of the wind resource, should qualify for capacity payments despite not being able to provide power during peak periods upon demand.

Responses:

- a. The purpose of acquiring firm capacity is to provide a defined level of reliability, which is always less than "perfect" meaning that there is a loss of load probability greater than zero at any hour of the year. Use of a LOLP approach allows the utility to determine how much non-wind capacity the utility must acquire in order to have the system (consisting of existing resources, new wind resources, and new non-wind resources) provide the same level of reliability (measured by LOLP) as would be the case using no wind energy and a larger amount of non-wind capacity.
- b. Yes. The utility should define a reliability criteria measured as minutes of loss of load per year, and use the best combination of resources to achieve that loss of load probability.
- c. The wind resource provides capacity to the system at various hours of the year. Each of those hours has a loss of load probability, and the presence of the wind resource improves that statistic for every hour in which it provides service. Absent any reduction in non-wind generation acquisition, this would result in improved system reliability, for which the wind energy resource owner should be compensated. A LOLP approach ensures that customers pay no more for the same level of reliability whether that reliability is provided by a larger amount of wind energy capacity operating on an unscheduled basis or a smaller amount of non-wind capacity

that can be dispatched by the utility. Basically, the improved reliability during some hours offsets the diminished reliability during other hours.

HECO/Maui-DT-SIR-21 Ref: Maui Response to HECO/Maui-DT-IR-12, subpart a.

Please describe the equipment, software, and communication requirements of the "virtual power plant program" evaluated by the County of Maui.

Response:

For a representative description, see www.encorp.com. The Encorp systems are used as an example and other systems could also be used.

HECO/Maui-DT-SIR-22 Ref: Maui Response to HECO/Maui-DT-IR-12, subpart b.

Please explain any run time limitations by the State of Hawaii Department of Health on the use of diesel standby generators for non-emergency uses.

Response:

It is Mr. Kobayashi's understanding from the State DOH that run time limitations would need to be negotiated, especially if biodiesel or biodiesel blended fuels are used.

HECO/Maui-DT-SIR-23 Ref: Maui Response to HECO/Maui-DT-IR-16, subpart b.

Please fully explain what types and sizes of DG systems the County of Maui believes are not addressed in Rule 14.H.

Response:

It appears that Rule 14.H does not apply to DG units that are net metered or to DG units that sell power via a purchase power agreement.

HECO/Maui-DT-SIR-24 Ref: Maui Response to HECO/Maui-DT-IR-19

a. Please provide any proposed legislation being considered by the County of Maui regarding the mandating of solar water heating for new construction and what the County of Maui's position is on this legislation.

- b. If the County of Maui's position is the use of utility hookup fees rather than any proposed legislation stated in subpart a. above, please provide any analysis used to support this position.

Response:

On August 16, 2004, Maui County Council Member Charmaine Tavares, Chair of the Energy and Economic Development Committee, stated in a committee meeting that the Committee will not be considering a solar water heating mandate for the remainder of the current Council term.

HECO/Maui-DT-SIR-25 Ref: Maui Response to HECO/Maui-DT-IR-34

Has the County of Maui had any discussions with hospitals, hotels and other owners of emergency generators to determine the level of interest in allowing the utility to operate their emergency generators to be used as a utility resource which could include frequent and long duration use of these generators?

Response:

See our response to HECO/Maui-DT-SIR-11.

DATED: Wailuku, Maui, Hawaii, September 15, 2004.

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COUNTY OF MAUI

By Cindy Y. Young
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CERTIFICATE OF SERVICE

I hereby certify that copies of the foregoing document were duly served upon the following by electronic mail and by United States mail, postage prepaid, on September 15, 2004, addressed as follows:

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DATED: Wailuku, Maui, Hawaii, September 15, 2004.

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